

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	E. Scott Hagermoser et al.	Examiner:	Moon, Seokyun
Serial No.:	10/658,490	Group Art Unit:	2629
Filed:	September 8, 2003	Docket No.:	59004US002
Title:	VEHICLE TOUCH INPUT DEVICE AND METHODS OF MAKING SAME		

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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[37 CFR § 1.8(a)]

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Date: December 2, 2008 Signed by: /Nick Baumann/

Dear Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed on November 17, 2008 appealing the final rejections of claims 1-7, 9-16, and 23-40 in the above-identified application as set forth in the Final Office Action mailed September 24, 2008.

The U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No. 500471 in the amount of \$540.00 for filing a Brief in Support of an Appeal as set forth under 37 C.F.R. § 41.20(b)(2). The U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No. 500471 for any other required fees (or credit any overpayment) to Deposit Account No. 500471 at any time during the pendency of this application.

Appellant respectfully requests that the Board consider and reverse the Examiner's rejections of claims 1-7, 9-16, and 23-40.

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REAL PARTY IN INTEREST

The intellectual property embodied in the pending application is assigned to 3M Innovative Properties Company, a Delaware Corporation doing business in Saint Paul, Minnesota.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant's representative that will have a bearing on the Board's decision in the present Appeal.

STATUS OF CLAIMS

Claims 1-7, 9-16, 23-40, and 42 are pending in the application. Claims 8, 17-22, and 41 have been cancelled. Claim 42 was newly presented in the Amendment and Response filed on June 18, 2008 and rejected in the Final Office Action mailed on September 24, 2008. Claims 1-7, 9-16, and 23-40 have been twice rejected and are the subjects of the present appeal.

STATUS OF AMENDMENTS

No amendments to the claims have been filed subsequent to the final rejections set forth in the Final Office Action mailed on September 24, 2008. The claims remain pending as presented in the Response filed on June 18, 2008.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The subject matter of the pending independent claims relates to an airbag cover having an airbag surface accessible to and touchable by an occupant of the vehicle, and a capacitive touch sensor disposed between the airbag and the airbag cover.

Independent claim 1 relates to a touch input device for interacting with electronic systems in a vehicle that includes an airbag. With reference to Figures 1-2B, independent claim 1 requires an airbag cover 260 having an airbag surface 100 accessible to and touchable by an occupant of the vehicle, and a capacitive touch sensor 110 disposed between the airbag (page 5, line 23 – page 6, line 6) and the airbag cover 260 (page 6, lines 18-23). The touch sensor 110 is

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configured so that a touch applied on the airbag surface 100 of the airbag cover 260 forms a circuit (page 7, line 22) through the airbag surface 100 to the touch sensor 110 that allows capacitive coupling (page 6, lines 17-23; page 7, line 19-page 8, line 3) between the touch and the touch sensor 110 through the airbag surface 100 of the airbag cover 260. The touch sensor is adapted for connecting to a controller 120 that uses signals generated by the capacitive coupling to interact with multiple electronic systems of the vehicle (page 7, lines 3-15). The capacitive touch sensor is configured to reduce interference with airbag deployment (page 5, lines 2-6; and claim 8 as filed).

Independent claim 23 relates to a method of making a touch-enabled airbag cover. Independent claim 23 requires providing an airbag cover 260 configured for enclosing an airbag in a vehicle (page 5, line 23-page 6, line 6) and for providing a finished surface (page 2, lines 15-20; and claim 23 as filed); disposing a capacitive touch sensor 110 on a back surface (page 6, line 22) of the airbag cover 260 opposing the finished surface, the touch sensor configured so that a touch to a designated area (page 7, line 4) of the finished surface allows capacitive coupling (page 6, lines 17-23; page 7, line 19-page 8, line 3) between the touch and the touch sensor 110 through the airbag cover 260; connecting the touch sensor 110 to a controller 120; using signals (page 2, lines 2-3) generated by the capacitive coupling to interact with one of radio controls (page 10, lines 9-15), a heads up display (claim 19 as filed), a heating/cooling blower (page 10 lines 9-15), a navigation system (claim 21 as filed), and a hands-free phone (page 10, lines 9-15; and claim 22 as filed) of the vehicle; and configuring the capacitive touch sensor to minimally interfere with airbag deployment (page 5, lines 2-6; and claim 8 as filed).

Independent claim 28 relates to a touch input device for interacting with electronic systems in a vehicle. Independent claim 28 requires a capacitive touch sensor 110 disposed behind a surface 100 in the vehicle that is accessible and touchable by an occupant in the vehicle, where the touch sensor 110 is disposed in a manner such that the presence of the touch sensor maintains the look, feel, and functionality (page 4, lines 7-14; page 5, lines 2-4; page 11, lines 15-16) of the surface as if the touch sensor was excluded. The touch sensor is configured so that a touch to a designated area (page 7, line 4) of the surface allows capacitive coupling (page 6, lines 17-23; page 7, line 19-page 8, line 3) between the touch and the touch sensor 110 through

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the surface 100. The touch sensor is adapted for connecting to a controller 120 capable of using signals generated by the capacitive coupling to interact with multiple electronic systems of the vehicle (page 7, lines 3-15). The capacitive touch sensor is integrated (page 4, line 28-page 5, line 2) with the surface in the vehicle and configured to enable unimpeded safety functionality of the surface in the vehicle (page 5, lines 2-6; and claim 8 as filed).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

- I. Whether claims 1-7, 9-11, 13-16, 28-38, and 42 (including independent claims 1 and 28) are rendered obvious under 35 U.S.C. § 103 over Gillespie, U.S. Patent No. 7,109,978 (“Gillespie”) and Pryor, U.S. Patent No. 7,084,859 (“Pryor”) and further in view of Neuman, U.S. Patent No. 5,942,815 (“Neuman”).
- II. Whether claims 23 and 27 (including independent claim 23) are rendered obvious under 35 U.S.C. § 103(a) over Gillespie in view of Pryor.

ARGUMENT

I. The Applicable Law under 35 U.S.C. § 103.

“Patent examiners carry the responsibility of making sure that the standard of patentability enunciated by the Supreme Court and by the Congress is applied in each and every case.” MPEP § 2141 I (emphasis in the original). The Examiner bears the burden under 35 U.S.C. § 103 in establishing a *prima facie* case of obviousness. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

Patent Office policy is to follow *Graham v. John Deere Co.* in the consideration and determination of obviousness under 35 U.S.C. § 103. *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1733; 82 USPQ2d 1385, 1391; *MPEP § 2141*. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966).

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The test for obviousness under §103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *Interconnect Planning Corp. v. Feil*, 227 USPQ 543, 551 (Fed. Cir. 1985). A prior patent cited as a § 103 reference must be considered in its entirety, “*i.e.* as a whole, including portions that lead away from the invention.” *Id.* That is, the Examiner must recognize and consider not only the similarities, but also the critical differences between the claimed invention and the prior art as one of the factual inquiries pertinent to any obviousness inquiry under 35 U.S.C. § 103. *In re Bond*, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990) (emphasis added).

Explicit disclosures in a cited reference that teach away from the purported combination cannot be ignored, as this an essential part of determining the scope and content of the prior art as required by *Graham v. John Deere*. A *prima facie* case of obviousness may be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

“A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1731; 82 USPQ2d 1385, 1389 (*emphasis added*). In making this point, the Court noted that “[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1738; 82 USPQ2d 1385, 1396 (*emphasis added*).

“[W]hen the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious.” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1737; 82 USPQ2d 1385, 1395 (citing to *United States v. Adams*, 383 U.S. 39, 51-52; 148 USPQ 479).

“[W]hen the prior art teaches away from the claimed solution . . ., obviousness cannot be proven merely by showing that a known composition could have been modified by routine experimentation or solely on the expectation of success; it must be shown that those of ordinary skill in the art would have had some apparent reason to modify the known composition in a way

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that would result in the claimed composition.” Board of Patent Appeals and Interferences precedential opinion located at: <http://www.uspto.gov/web/offices/dcom/bpai/prec/fd074423.pdf>

A *prima facie* case of obviousness is not established if the proposed combination of the references would change the principle operation of the references. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

“To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.’” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); M.P.E.P § 2163.07(a).

If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

An applicant is entitled to a patent grant if any one of the elements of a *prima facie* case of obviousness is not established. The Federal Circuit has endorsed this view in stating: “If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent.” *In re Oetiker*, 24 USPQ2d 1443, 1448 (Fed. Cir. 1992).

II. Claims 1-7, 9-11, 13-16, 28-38, and 42 (including independent claims 1 and 28) are not rendered obvious over Gillespie and Pryor and further in view of Neuman.

- A. The cited references teach away from a capacitive touch sensor disposed between the airbag and the airbag cover.

Independent claim 1 requires a capacitive touch sensor disposed between an airbag and the airbag cover, and independent claim 28 requires a capacitive touch sensor disposed behind a surface in a vehicle that is accessible and touchable by an occupant in the vehicle, the touch sensor disposed in a manner such that the presence of the touch sensor maintains the look, feel, and functionality of the surface as if the touch sensor was excluded.

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The Examiner takes the position at pages 6-7 of the Final Office Action mailed on September 24, 2008 that Gillespie as modified by Pryor discloses a capacitive touch sensor disposed behind an airbag cover (and Gillespie as modified by Pryor and Neuman discloses a capacitive touch sensor disposed between an airbag and a cover).

Appellant's position is that the cited references must be considered in their entirety, and when so considered, the scope and content of the references in fact teach away from the claimed capacitive touch sensor disposed between an airbag and an airbag cover.

Gillespie provides a touch sensor array 22. Gillespie is silent as regards an airbag.

With reference to Figure 2D and Gillespie at column 11, lines 36-44, the touch sensor array 22 includes a substrate 24 including upper traces 26 and lower traces 30 with an insulating layer 36 disposed over sense pads 34 on top surface 28 of substrate 24. Gillespie discloses at column 11, lines 36-41: "An insulating layer 36 is disposed over the sense pads 34 on top surface 28 to insulate a human finger or other object therefrom. Insulating layer 36 is preferably a thin layer ("i.e., approximately 5 mils") to keep capacitive coupling large" Regarding the thin insulating layer 36, Gillespie discloses at column 6, lines 30-32: "The insulating layer is thin enough to promote significant capacitive coupling between a finger placed on its surface and the first and second sets of conductive lines."

Pryor provides a touch screen display. Pryor expressly provides at column 4, lines 34-57, quoting:

Some **requirements** of an Automobile display/touch screen could arguably be at least the following:

1. Sturdy - . . .

7. **Not sacrifice airbag function – thus must not be where the airbag is**, or the airbag/and screen module **must be** of another design (one of which is disclosed herein)

Emphasis added.

Pryor expressly excludes placing his touch screen near the airbag (The touch screen "must not be where the airbag is"). Pryor discloses exactly one airbag/touch screen module Figure 4 consistent with "the airbag/and screen module **must be** of another design." Pryor

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discloses at column 27, lines 1-6 that Figure 4 illustrates the same touch screen arrangement as disclosed in Figure 3, but with an image projection device 410 located off axis to accommodate an airbag 440 located on axis.

The touch screen of Figure 3 is described beginning at column 23, line 38 and relates to a surface distortion-based transduction of touch events. Pryor discloses at column 23, lines 55-60 that touch screen 301 is located on the vehicle dashboard 302 and is of significant size so as to make reading **and touching** easy. With reference to Figure 4, the touch screen of Pryor is located forward of airbag 440 and situated to be touched by a point 479 of an ordinary pen or other device (column 27, lines 36-42).

Consequently, Gillespie as modified by Pryor results in, at most, a readable/easy-to-touch screen forward of an airbag. **Thus, the combination does not provide a touch screen disposed behind an airbag cover, as argued by the Examiner.**

Appellant's position is that the supposed *prima facie* case of obviousness has been rebutted. A *prima facie* case of obviousness may be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. *In re Geisler* at 1471.

1. The purported combination changes the principle operation of the references.

The Examiner takes the position at page 6 that Neuman discloses a capacitive touch sensor between an airbag 704 and an airbag cover 702. In fact, Neuman discloses a simple parallel plate capacitor 102. Neuman discloses at column 6, lines 28-35 that capacitor 102 is held in place by cover 702, or held in place by a backing plate disposed between airbag 704 and capacitor 102.

Appellant's position is that modifying Gillespie in view of Pryor and Neuman would render Gillespie unsatisfactory for its intended purpose of keeping capacitive coupling large since the Examiner's interpretation would replace Gillespie's thin insulating layer 36 ("i.e., approximately 5 mils") with the airbag cover (not thin), or alternatively, would require that the entire structure illustrated in Figure 2D of Gillespie be disposed between an airbag and its cover. The proposed combination would impose an increase in the thickness of Gillespie's insulating layer, and thus would change the principle operation of Gillespie.

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Modifying Gillespie in view of Pryor and Neuman would render Pryor unsatisfactory for its intended purpose of providing a screen that can be touched with a pen. The proposed combination would render Pryor's touch screen inaccessible behind an airbag, and thus would change the principle operation of Pryor. A *prima facie* case of obviousness cannot be established if the purported combination would change the principle operation of the references. 270 F.2d at 810.

2. Critical differences between the claims and the references have been ignored.

In addition, the Examiner must recognize and consider not only similarities, but also the critical differences between the claims and the prior art as one of the factual inquiries pertinent to any obviousness inquiry under 35 U.S.C. § 103. *In re Bond*, 15 U.S.P.Q.2d at 1568.

One critical difference is that the insulating layer 36 of Gillespie is preferably a thin layer ("i.e., approximately 5 mils") to keep capacitive coupling large. The approach in Gillespie on its face is incompatible with a capacitive touch sensor disposed between an airbag and an airbag cover, as required by claim 1, or a capacitive touch sensor disposed behind a surface in a vehicle, as required by claim 28.

Another critical difference is that Pryor expressly requires that the touch screen not be where the airbag is. In the only example offered by Pryor, the touch screen is exposed and available for touching by a pen, and therefore not behind an airbag cover or between an airbag and an airbag cover.

B. The pending claims are non-obvious under KSR.

Relying upon KSR, Appellant's position is that a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. One of ordinary skill in the touch screen art would not be prompted by the cited references to dispose a capacitive touch sensor between an airbag and an airbag cover, as required by independent claim 1, or a capacitive touch sensor disposed behind a surface in a vehicle, as required by independent claim 28.

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In particular, one of ordinary skill in the art would view Pryor as providing a touch screen that is positioned so it can be touched and/or read, and Gillespie as providing, at most, thin insulating layers over a touch sensor that keep capacitive coupling large. Neuman's parallel plate capacitor horn switch teaches away from both of these desired objectives. That is to say, if the purported combination were made, Pryor's touch screen would not be touchable/readable and Gillespie's layer over the sense pads 34 would not be "thin to keep capacitive coupling large." Consequently, it cannot be said that a person of ordinary skill in the touch screen field would have any reason to combine the cited references, much less a reason to combine the cited references in the way that this pending claimed new invention does. *KSR* at 1738.

Additionally under *KSR*, when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be non-obvious. *KSR* at 1737.

- C. Obviousness cannot be proven merely by showing that a known composition could have been modified by routine experimentation or solely on the expectation of success.

Appellant's position is that the cited references are deficient, alone or in combination, in rendering independent claims 1 and 28 obvious. Gillespie is silent on the use of airbags. Pryor is explicit in requiring that the touch screen must not be where the airbag is, or must be of another design that places a touchable/readable touch screen in front of an airbag. Neuman provides a parallel plate capacitor between an airbag and its cover.

A recent precedential opinion of the Board of Patent Appeals and Interferences persuasively supports Appellant's position. "[W]hen the prior art teaches away from the claimed solution . . . , obviousness cannot be proven merely by showing that a known composition could have been modified by routine experimentation or solely on the expectation of success; it must be shown that those of ordinary skill in the art would have had some apparent reason to modify the known composition in a way that would result in the claimed composition." *Ex parte Thomas J. Whelan II*, Appeal 2007-4423, Decided July 23, 2008, precedential opinion located at Board of Patent Appeals and Interferences site: <http://www.uspto.gov/web/offices/dcom/bpai/prec/fd074423.pdf>

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- D. That the capacitive touch sensor is configured to reduce interference with airbag deployment is not inherent in the cited references, nor would this claimed feature be recognized as inherent by persons of ordinary skill.

The Examiner takes the position at page 7 of the Final Office Action mailed on September 24, 2008 that Gillespie as modified by Pryor and Neuman inherently teaches a capacitive touch sensor configured to reduce interference with airbag deployment.

Appellant first notes that none of the cited references teach or suggest or otherwise discuss touch sensors in relationship to **deployed** airbags. Gillespie is silent as to airbags. Pryor provides a touchable and a readable touch screen. Neuman provides a parallel plate capacitor for a horn switch but does not mention airbag deployment even once. Federal Circuit case law requires that to establish inherency, the extrinsic evidence (the cited references) must make clear that the missing descriptive matter (airbag deployment) is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.

None of the references, alone or in combination, make clear that the missing descriptive matter of the interaction of a touch screen with airbag deployment is necessarily present in the reference. In fact, Pryor imposes a requirement that in order to not sacrifice airbag function, the touch screen must not be where the airbag is. In Pryor, his touch screen is located off axis away from the airbag and in a manner that a pen 479 may touch the touch screen 430.

Appellant's position is that the Examiner's dependence upon an inherent teaching in the cited references is contradicted by the cited references themselves, and by established case law. The Federal Circuit position is that inherency may not be established by probabilities or possibilities, and the mere fact that a certain thing may result from a given set of circumstances is not sufficient. 169 F.3d at 745.

Claims 6-7, 9-11, 13-16, 36, and 42 further define independent claim 1, and claims 29-38 further define independent claim 28. Thus, it is respectfully requested that the rejections to claims 1-7, 9-11, 13-16, 28-38, and 42 under 35 U.S.C. § 103 be withdrawn.

Consequently, appellant is entitled to a patent grant since a *prima facie* case of obviousness has not been established.

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III. Claims 23 and 27 (including independent claim 23) are not rendered obvious under over Gillespie in view of Pryor.

Explicit disclosures in a cited reference that teach away from the purported combination cannot be ignored, as this an essential part of determining the scope and content of the prior art as required by *Graham v. John Deere*.

Independent claim 23 requires disposing a capacitive touch sensor on a back surface of an airbag cover, and configuring the capacitive touch sensor to minimally interfere with airbag deployment. Appellant again notes that none of the cited references teach or suggest or otherwise discuss touch sensors in relationship to **deployed** airbags.

The Examiner concedes at page 13 of the Final Office Action that Gillespie does not teach providing an airbag cover configured for enclosing an airbag, or disposing the capacitive touch sensor on a back surface of the airbag cover, or using the capacitive touch sensor to interact with multiple controls of a vehicle. The Examiner cites to Pryor at column 7, lines 26-28 as providing an airbag cover and disposing the capacitive touch sensor on a back surface of the airbag cover (the Examiner does not cite to Pryor to support this allegation) and using the touch sensor to interact with radio controls.

Pryor at column 7, lines 26-28 as cited by the Examiner in fact provides: "In addition, the invention is also unique among touch screens, as it allows the touch screen to coexist so to speak, with an airbag. This in-turn may allow novel location of the invention in the steering wheel." Nothing in the disclosure of Pryor provides for disposing a capacitive touch sensor on a back surface of an airbag cover as required by independent claim 23. The one embodiment provided by Pryor (illustrated in Figure 4) clearly shows the touch screen 430 available and accessible to the pen point 479. Appellant's position is that the Examiner has not met the burden under 35 U.S.C. § 103 in establishing a *prima facie* case of obviousness in rejecting independent claim 23 over Gillespie in view of Pryor.

Claim 27 further defines independent claim 23. Thus, it is respectfully requested that the rejections to claims 23 and 27 under 35 U.S.C. § 103 be withdrawn.

Consequently, appellant is entitled to a patent grant since a *prima facie* case of obviousness has not been established.

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CONCLUSION

In view of the arguments above based on the current interpretation of the law, Appellant asserts that a *prima facie* case of obviousness in rejecting the pending claims has not been established under Section 103 over Gillespie and Pryor and/or Neuman. It is believed that claims 1-7, 9-16, 23-40, and 42 recite patentable subject matter over the cited references and that all rejections to the claims have been overcome.

Thus, Appellant respectfully requests that the Board reverse the rejections to claims 1-7, 9-16, 23-40, and 42.

Any inquiry regarding this Appeal Brief to the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office should be directed to Steven Bern at Telephone No. (651) 733-2255, Facsimile No. (651) 736-3833. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,
E. Scott Hagermoser et al.
By their attorneys,

Dated: December 2, 2008

NRB: cms

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CLAIMS APPENDIX

The following is a copy of the claims involved in the present Appeal, including claim identifiers provided as a courtesy to the reader.

1. (Previously Presented) A touch input device for interacting with electronic systems in a vehicle that includes an airbag, comprising:

an airbag cover having an airbag surface accessible to and touchable by an occupant of the vehicle; and

a capacitive touch sensor disposed between the airbag and the airbag cover, the touch sensor configured so that a touch applied on the airbag surface of the airbag cover forms a circuit through the airbag surface to the touch sensor that allows capacitive coupling between the touch and the touch sensor through the airbag surface of the airbag cover, the touch sensor adapted for connecting to a controller that uses signals generated by the capacitive coupling to interact with multiple electronic systems of the vehicle;

wherein the capacitive touch sensor is configured to reduce interference with airbag deployment.

2. (Original) The touch input device of claim 1, wherein the vehicle is an automobile.

3. (Original) The touch input device of claim 1, wherein the surface of the airbag cover comprises a relief pattern marking the designated area.

4. (Original) The touch input device of claim 1, wherein the airbag cover is on a

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Filed: September 8, 2003

Docket No.: 59004US002

Title: VEHICLE TOUCH INPUT DEVICE AND METHODS OF MAKING SAME

steering wheel.

5. (Original) The touch input device of claim 4, wherein the steering wheel incorporates additional touch sensors.

6. (Original) The touch input device of claim 1, wherein the airbag cover is on a passenger side of the vehicle.

7. (Original) The touch input device of claim 1, further comprising one or more additional capacitive touch sensors positioned between the airbag and the airbag cover.

8. (Cancelled)

9. (Original) The touch input device of claim 1, wherein the capacitive touch sensor is an x-y sensor.

10. (Original) The touch input device of claim 1, wherein the capacitive touch sensor is a quadrant segmented sensor.

11. (Original) The touch input device of claim 1, wherein the capacitive touch sensor is a scroll bar sensor.

12. (Previously Presented) The touch input device of claim 5, further comprising at least one discrete capacitive touch sensor button disposed within a spoke of the steering wheel, the capacitive coupling calibrated to generate for the button one of a button down signal and a button up signal.

13. (Original) The touch input device of claim 1, wherein the capacitive touch sensor comprises a substrate comprising paper.

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14. (Original) The touch input device of claim 1, wherein the capacitive touch sensor comprises a substrate comprising cloth.

15. (Original) The touch input device of claim 1, wherein the capacitive touch sensor comprises a substrate comprising plastic.

16. (Original) The touch input device of claim 1, wherein the airbag cover provides a substrate for the capacitive touch sensor.

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Previously Presented) A method of making a touch-enabled airbag cover, comprising:

providing an airbag cover configured for enclosing an airbag in a vehicle and for providing a finished surface;

disposing a capacitive touch sensor on a back surface of the airbag cover opposing the finished surface, the touch sensor configured so that a touch to a designated area of

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the finished surface allows capacitive coupling between the touch and the touch sensor through the airbag cover;

connecting the touch sensor to a controller;

using signals generated by the capacitive coupling to interact with one of radio controls, a heads up display, a heating/cooling blower, a navigation system, and a hands-free phone of the vehicle; and

configuring the capacitive touch sensor to minimally interfere with airbag deployment.

24. (Original) The method of claim 23, wherein the step of disposing a capacitive touch sensor on the back surface of the airbag cover comprises transferring conductors forming the touch sensor from a decal layer to the back surface of the airbag cover.

25. (Original) The method of claim 23, wherein the step of disposing a capacitive touch sensor on the back surface of the airbag cover comprises laminating the touch sensor to the back surface of the airbag cover.

26. (Previously Presented) The method of claim 23, wherein the step of disposing a capacitive touch sensor on the back surface of the airbag cover comprises disposing the touch sensor in a mold and molding the airbag cover using the mold so that the touch sensor is embedded in the back surface of the airbag cover.

27. (Original) The method of claim 23, further comprising marking the designated area with a relief pattern that can be discerned by a user's tactile senses.

28. (Previously Presented) A touch input device for interacting with electronic systems in a vehicle, comprising:

a capacitive touch sensor disposed behind a surface in the vehicle that is accessible and touchable by an occupant in the vehicle, the touch sensor disposed in a manner

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such that the presence of the touch sensor maintains the look, feel, and functionality of the surface as if the touch sensor was excluded,

wherein the touch sensor is configured so that a touch to a designated area of the surface allows capacitive coupling between the touch and the touch sensor through the surface, the touch sensor being adapted for connecting to a controller capable of using signals generated by the capacitive coupling to interact with multiple electronic systems of the vehicle;

wherein the capacitive touch sensor is integrated with the surface in the vehicle and configured to enable unimpeded safety functionality of the surface in the vehicle.

29. (Original) The touch input device of claim 28, wherein the surface is a surface of a steering wheel.

30. (Original) The touch input device of claim 28, wherein the surface is a surface of a dashboard.

31. (Original) The touch input device of claim 28, wherein the surface is a surface of a visor.

32. (Original) The touch input device of claim 28, wherein the surface is a surface of a center console.

33. (Original) The touch input device of claim 28, wherein the surface is a surface of an arm rest.

34. (Original) The touch input device of claim 28, wherein the surface is a surface of a seat cover.

35. (Original) The touch input device of claim 28, wherein the designated area of surface is marked by a relief pattern discernable by a user's tactile sense.

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36. (Previously Presented) The touch input device of claim 1, wherein the capacitive touch sensor is an off-display capacitive touch sensor characterized by an absence of a display screen.

37. (Previously Presented) The touch input device of claim 28, wherein the surface is not a display screen.

38. (Previously Presented) The touch input device of claim 28, wherein the capacitive touch sensor comprises a projected capacitive touch sensor and the surface comprises an opaque surface.

39. (Previously Presented) The touch input device of claim 11, wherein the scroll bar touch sensor comprises an analog slider scroll bar touch sensor.

40. (Previously Presented) The touch input device of claim 11, wherein the scroll bar touch sensor comprises a set of discrete sensor pads.

41. (Cancelled)

42. (Previously Presented) The touch input device of claim 1, wherein the capacitive touch sensor is embedded in the airbag cover.

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EVIDENCE APPENDIX

All of the evidence related to this Appeal is on the record and before the Board. Therefore, no additional evidence is identified in this Appendix.

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RELATED PROCEEDINGS APPENDIX

There are no related proceedings to be considered in this Appeal. Therefore, no such proceedings are identified in this Appendix.